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09/686,178	10/11/2000	Scott Brown	RLC-74	4704

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EXAMINER

MOORE, IAN N

ART UNIT	PAPER NUMBER
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2661

DATE MAILED: 02/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/686,178

Applicant(s)

BROWN ET AL.

Examiner

Ian N Moore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Claim Objections

1. Claim 8 recites the limitation "said channel number pair" in line 15. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Riley (5,907,539).

Regarding Claim 1, Riley'539 discloses an apparatus (see FIG. 1) for transferring multiplexed multiple multi-bit messages across a bit level network (see col. 6, line 40-52; note the system is able to transfer the multi-bits of data), said apparatus comprising:

a network interface for accessing the bit level network (see FIG. 1, Conductors 40), said network interface configured to transmit and receive a message at a preselected one of a plurality of time-division multiplex addresses (see FIG. 21, Frame Identifiers/addresses in plurality of frames/messages) on each channel of a preselected channel set (see FIG. 21, pluralities of serial multiplex time division slots (i.e. channels) forms into a frame (i.e. pre-selected channel set); see col. 5, line 2-65; see col. 16, line 54 and col.17, line 24; note that after multiplexing the time slots, each frame is given a predefined/unique frame number. The conductors/buses transmit and receive the frames.)

a processor in communication with said network interface (see FIG. 16, Integrated circuit 80 which is in communication with conductors (i.e. Data bus 46 and common bus 48));

a memory in communication with said processor (see FIG. 16, Serial to Parallel Shift Register 496 stores the data, and it couples to Integrated circuit 80); and

a second interface for connecting either an input or an output device (see FIG. 1, Input Device 50 or Output Device 54) to said processor (see FIG. 16, An output device 54 is couples to Integrated circuit 80);

whereby the multiple multi-bit messages are transmitted over said network interface (see FIG. 1, the multiplex data from Data Link modules are transmitted to the conductors 40; see col. 3, line 65-67).

Regarding Claim 2, Riley'539 discloses wherein said network interface includes a clock signal and a data signal (see FIG. 1, the conductors 40 consists of master clock line/bus 44 and data bus 46; see col. 5, line 30-45).

Regarding Claim 3, Riley'539 discloses wherein said data signal is a serial data stream synchronized with the said clock signal (see FIG. 2A, Input clock terminal 84, Input data terminal 86; note that the serial data signal is synchronized according to the clock signals. See col. 6, line 21-54 and see col. 15, line 12-62).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 4-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riley'539 in view of Sakagami (5,329,525).

Regarding claim 4, Riley'539 discloses all aspects of the claimed invention set forth in the rejection of claim 1 as described above, and further teaches wherein said data signal includes said message.

Riley'539 does not explicitly disclose said message including a command segment and a data segment, said command segment includes at least an operator and an operand.

However, the above-mentioned claimed limitations are taught by Sakagami'525. In particular, Sakagami'525 teaches said message including a command segment (see FIG. 3, header/control information bits: HD, ADS, SLP, and AP) and a data segment (see FIG. 3, data information bits: Rx), said command segment includes at least an operator (see FIG. 3, HD, SLP, and AP) and an operand (see FIG. 3, address ADS). Also see col. 6, line 16-64.

In view of this, having the system of Riley'539 and then given the teaching of Sakagami'525, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Riley'539, by providing a data frame which consists of both command/control/header bits and data bits, as taught by Sakagami'525. The

motivation to combine is to obtain the advantages/benefits taught by Sakagami'525 since Sakagami'525 states at col. 3, line 5-40 that such modification would improve the communication and exchange of information between a master station and slave stations.

Regarding claim 5, the combined system of Riley'539 and Sakagami'525 discloses all aspects of the claimed invention set forth in the rejection of claim 1 and 4 as described above. Riley'539 further teaches wherein segment is a serial bitstream starting at a specified address determined by said clock signal on a first channel of said preselected channel set (see FIG. 17A, address A time slot 422 of the frame 62), and said segment is a serial bitstream starting at said specified address on a second channel of said preselected channel set (see FIG. 17B address B time slot 424 of the frame 62). Also, see col. 7, line 65-67 ; col. 17, line 1-39; col. 5, line 24-65; col. 3, line 55-67; note that the data link has plurality of time slots/channels (e.g., Channel A with address A and channel B with address B). Each time slot is multiplexed and incorporated within a frame, and the frame is identified by a frame address. The beginning address/cycle of the time slot for transmission is instructed by the master clock signal.

In addition, Sakagami'525 discloses wherein said command segment and said data segment starts at said specified address (see FIG. 3, HD, ADS, SLP, AP, RX; see col. 6, line 14-65; note that both header/control and data information are transmitted between the master station and slave stations. The header/control and data information bits must have a specific predefined address to start.)

In view of this, having the system of Riley'539 and then given the teaching of Sakagami'525, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Riley'539, by further assigning specific addresses to the command/control/header bits to the first portion of the frame, and assign specific address to the data bits to the second portion of the frame, as taught by Sakagami'525, for the same motivation as stated above in Claim 4.

Regarding claim 6, the combined system of Riley'539 and Sakagami'525 discloses all aspects of the claimed invention set forth in the rejection of Claims 1 and 4 as described above, and Riley'539 further teaches wherein a read request, said memory at a location specified by said operand contains data which is copied to said data segment (see FIG. 15, Shift Registers 590 and 588, and FIG. 1, data bus 46 and clock bus 44; see col. 3, line 65-67; note that in response to the master clock request/instruct signal message, the data link module retrieves/passes the associated data to the data bus. Thus, the request/instruction signal is the read signal.)

Sakagami'525 further discloses wherein said operator includes a request (see FIG. 3, Header/control bits: HD, ADS, SLP and AP; see col. 6, line 5-64; note that when the slave station receives the DFa frame from the master station, it performs the tasks accordingly).

In view of this, having the system of Riley'539 and then given the teaching of Sakagami'525, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Riley'539, by further performing

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tasks/operations according to the headers/control requests/bits, as taught by Sakagami'525, for the same motivation as stated above in Claim 4.

Regarding claim 7, the combined system of Riley'539 and Sakagami'525 discloses all aspects of the claimed invention set forth in the rejection of Claims 1 and 4 as described above, and Riley'539 further teaches wherein a write request, said data segment contains data which is copied to said memory at a location specified by said operand (see FIG. 15, Shift Registers 590 and 588; see col. 3 55-65; note that in response to the master clock request/instruct signal, the data link module stores the associated data in the specific corresponding registers. Thus, the request/instruction signal is the write signal message.)

Sakagami'525 further discloses wherein said operator includes a request (see FIG. 3, HD, ADS, SLP and AP; see col. 6, line 5-64; note that when the slave station receives the DFa frame with Rx logic value 0 and parity bit value 1 from the master station, it performs the tasks accordingly).

In view of this, having the system of Riley'539 and then given the teaching of Sakagami'525, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Riley'539, by further performing tasks according to the headers/control requests/bits, as taught by Sakagami'525, for the same motivation as stated above in Claim 4.

Regarding claim 8, Riley'539 discloses a method for transferring large amounts of complex data between a data link module (see FIG. 1, Data Link Module 32) and a host (see

FIG. 1, the combined system of Host computer 34 and Master clock module 36) across a bit level network (see FIG. 1, Conductors 40), said method comprising the steps of :

(a) configuring a channel set to said data link module (see FIG. 21, Time slots 85; see col. 5, line 2-65);

(b) configuring a frame address to said data link module (see FIG. 21, Frame Identifiers/addresses in plurality of frames/messages; see col. 5, line 2-65; see col. 16, line 54 and col.17, line 24. Note that after multiplexing the time slots, each frame is given a predefined/unique frame number);

(c) sending a message from said host to said data link module, said message including a message segment on a first channel of said channel set at said data link module frame address (see FIG. 17A, address A time slot 422 of the frame 62) and a message data segment on a second channel of said channel set at said data link module frame address (see FIG. 17B address B time slot 424 of the frame 62. Also, see col. 7, line 65-67; col. 17, line 1-39; col. 5, line 24-65, col. 3, line 55-67; note that the data link has plurality of time slots/channels (e.g.. Channel A with address A and channel B with address B). Each time slot is multiplexed and incorporated within a frame, and the frame is identified by a frame address. The beginning address/cycle of the time slot for transmission is instructed by the master clock signal.) said message segment including a register and at least either of a read request or a write request (see FIG. 15, Shift Registers 590 and 588, and FIG. 1, data bus 46 and clock bus 44; see col. 3, , line 65-67; note that the request/instruct signal from the master clock must include the output module to store/pass the associated data. Thus, the request/instruction signal is the read/write signal message);

(d) accessing a register in said data link module specified in said register as a specified register (see FIG. 15, Shift Registers 590 and 588; see col. 3 55-65; note that in response to the master clock request/instruct signal, the data link module accesses/stores the associated data in the registers);

(e) sending a message sending a message from said data link module to a bus, said message including a on a first channel of said channel number pair at said data link module frame address and a segment on a second channel of said channel number pair at said data link module frame address (see FIG. 15, Shift Registers 590 and 588, and FIG. 1, data bus 46 and clock bus 44; see col. 3, line 65-67; note that in response to the master clock request/instruct signal, the data link module passes the associated data to the data bus. Also, note that the same stored message information must pass to the data bus.)

Riley'539 does not explicitly disclose

(c) sending a message from said host to said data link module, said message including a message command segment and a message data segment, said message command segment including a register operand;

(e) sending a reply from said data link module to said host, said reply including a reply command segment and a reply data segment.

However, the above-mentioned claimed limitations are taught by Sakagami'525. In particular, Sakagami'525 teaches (c) sending a message from said host (see FIG. 2, Master Station 10) to said data link module (see FIG. 2, Slave Station 100), said message including a message command segment (see FIG. 3, header/control information bits: HD, ADS, SLP, and AP) and a message data segment (see FIG. 3, data information bits: Rx), said message

command segment including an operand (see FIG. 3, address information ADS); See col. 6, line 15-54; note that the master station 10 transmits the instruct/request frame DFa to the addressed slave station 100 in order to perform/operate tasks. The DFa frame consists header/control information bits and data information bits.

(e) sending a reply (see FIG. 3, DFb frame) from said data link module (see FIG. 2, Slave Station 100) to said host (see FIG. Master Station 10), said reply including a reply command segment (see FIG. 3, Data bit t0 is set logical 1, and parity bit and error bit) and a reply data segment (see FIG. 3, Data bit t1-15 is set logical 0). Also, see col. 6, line 5-15 and line 55-64. After performing/operating according to the master station's instruction, the slave station returns the frame DFb back to the master station by setting appropriate control/command bits and data bits.

In view of this, having the system of Riley'539 and then given the teaching of Sakagami'525, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Riley'539, by providing a mechanism to transfers data frames/messages between the master/host and the slave/client, as taught by Sakagami'525. The motivation to combine is to obtain the advantages/benefits taught by Sakagami'525 since Sakagami'525 states at col. 3, line 5-40 that such modification would improve the communication and exchange of information between a master station and slave stations.

Regarding claim 9, the combined system of Riley'539 and Sakagami'525 discloses all aspects of the claimed invention set forth in the rejection of Claim 8 as described above,

and Riley'539 further teaches wherein said message includes a read request, said step of accessing a register in said data link module further comprises the step of reading a value from said specified register as a read value (see FIG. 15, Parallel Shift Register 590 and 588; see FIG. 2A, Word Extender circuit 430; col. 21, line 1 to col. 22, line 40; note that the master clock signal instructs/requests to retrieve/copy/read the data from the registers and transmits the data to the data bus. Each retrieved/copied/read data must be presented by a number/value/unique-entry (i.e. time slot number, frame number, or a particular state/status of the clock) in order to access, retrieve and transmit them to the dedicated output data link. Note that when the instruction causes the data link module to retrieve/copy/place/move the data, it is a read request, and a number/value/unique-entry associated with such instruction is the read value).

Regarding claim 10, the combined system of Riley'539 and Sakagami'525 discloses all aspects of the claimed invention set forth in the rejection of Claims 8 and 9 as described above, and further teaches wherein read value, said reply command segment and said reply data segment.

In addition, Sakagami'525 discloses wherein said reply command segment equals said message command segment and said reply data segment contains value (see FIG. 3, DFb frame, and col. 6, line 5-15 and line 55-64). Note that the sole purpose of the reply/response/acknowledgement from the slave station to the master station is to update the master station that the requested/instructed operation/task is completed. Sakagami'525 teaches the response message includes command bits (i.e. setting data bit t0 to logical 1 and parity bit and error bit) and the data bits.

Riley'539 teaches a retrieved/copied/placed/read number/value/unique-entry according to the request/instruction. Sakagami'525 teaches sending a response/acknowledgement message back to the master station according to the request/instruction. Thus, Riley'539's requested/instructed results/values can be sent back to the host for the purpose of acknowledgement by Sakagami'525's teaching.

In view of this, having the system of Riley'539 and then given the teaching of Sakagami'525, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Riley'539, by providing a mechanism to response/acknowledge back to the master station along with the requested results/values, as taught by Sakagami'525, for the same motivation as stated above in Claim 8.

Regarding claim 11, the combined system of Riley'539 and Sakagami'525 discloses all aspects of the claimed invention set forth in the rejection of Claim 8 as described above, and Riley'539 further teaches wherein said message segment includes a write request, said step of accessing a register in said data link module further comprises the step of writing said message data segment to said specified register (see FIG. 15, Shift Registers 590 and 588; see col. 3 55-65; note that in response to the master clock request/instruct signal, the data link module stores the associated data in dedicated register. Thus, the request/instruction signal is the write signal message request.)

Sakagami'525 further discloses wherein said message includes a request (see FIG. 3, HD, ADS, SLP and AP; see col. 6, line 5-64; note that when the slave station receives the DFa frame with Rx logic value 0 and parity bit value 1 from the master station, it performs the tasks accordingly).

In view of this, having the system of Riley'539 and then given the teaching of Sakagami'525, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Riley'539, by further performing tasks according to the headers/control requests/bits, as taught by Sakagami'525, for the same motivation as stated above in Claim 8.

Regarding claim 12, the combined system of Riley'539 and Sakagami'525 discloses all aspects of the claimed invention set forth in the rejection of Claims 8 and 11 as described above, and further teaches wherein said reply command segment and said reply data segment.

In addition, Sakagami'525 discloses wherein said reply command segment equals said message command segment and said reply data segment equal said message data segment value (see FIG. 3, DFb frame, and col. 6, line 5-15 and line 55-64). Note that the purpose of the reply/response/acknowledgement from the slave station to the master station is to update/inform the master station that the requested/instructed operation/task is completed. Sakagami'525 teaches the response message includes command bits (i.e. setting data bit t0 to logical 1 and parity bit and error bit) and the data bits.

Riley'539 teaches a retrieved/copied/placed/read number/value/unique-entry according to the request/instruction. Sakagami'525 teaches sending a response/acknowledgement message back to the master station according to the request/instruction. In particular, per Riley'539, the instruction from the master clock is, to store the data into the dedicated register. Thus, Riley'539's requested/instructed

results/values can be sent back to the host for the purpose of acknowledgement by Sakagami'525's teaching. In this scenario, the results/values (i.e. the number of time slots/registers where the data supposes to be stored) must be the same data as requested data (i.e. the number of time slots/registers where the data are actually stored) to ensure the successful completion of requested tasks.

In view of this, having the system of Riley'539 and then given the teaching of Sakagami'525, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Riley'539, by providing a mechanism to response/acknowledge back to the master station along with the requested results/values, as taught by Sakagami'525, for the same motivation as stated above in Claim 8.

Regarding Claim 13, Riley'539 discloses a data link module (see FIG. 1, Data Link Module 32) connected to a data bus (see FIG. 1, data bus 46) and a master clock line (see FIG. 1, master clock bus 44) for use in a bit level network system having multiple data link modules (see FIG. 1, plurality of Data Link modules 32; col. 6, line 40-52; note the system is able to transfer the multi-bits of data), the master clock line for generating a predetermined number of time slots for a complete multiplexed channel (see FIG. 21, Time slots 85; see col. 5, line 2-65; note that the master clocks configures the time slots to a frame),

each time slot on the complete multiplexed channel associated with an address location of at least one data link module or a data bit on the data bus (see FIG. 21, Frame Identifiers/addresses in plurality of frames/messages; see col. 5, line 2-65; see col. 16, line 54 and col.17, line 24. Note that after multiplexing the time slots, each frame is given a

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predefined/unique frame number associated with a data link module), said data link module comprising:

means for interfacing with either an input device (see FIG. 1, Input device 50) or an output device (see FIG. 1, Output device 54);

means for receiving data from the data bus at a predetermined time slot on a first multiplexed channel (see FIG. 2A and 2B, Integrated circuit 80 and input terminals and output terminals; see col. 7, line 50 to col. 8, line 25; note that the data signal is received in the input data link module from the bus. Channel A inputs/receives the data signal at a particular time slot according to the master clock);

means for sending data to the data bus during said predetermined time slot on a second multiplexed channel (see FIG. 2A and 2B, Integrated circuit 80 and input terminals and output terminals; see col. 7, line 50 to col. 8, line 25; note that the data signal is received in the input data link module from the bus. Channel B outputs/shifts the data signal at a particular time slot according to the master clock);

means for processing said data (see FIG. 16, Integrated circuit 80 which is in communication with conductors (i.e. Data bus 46 and common bus 48) in order to process the data signal);

means for storing said data (see FIG. 15, Shift Registers 590 and 588; see col. 3 55-65; note that in response to the master clock request/instruct signal, the data link module stores the associated data in the specific corresponding registers); and

means for retrieving said data (see FIG. 15, Shift Registers 590 and 588, and FIG. 1, data bus 46 and clock bus 44; see col. 3, line 65-67; note that in response to the master clock

request/instruct signal, the data link module retrieves/recalls the stored associated data for transmission to the data bus.)

Riley'539 does not explicitly disclose said message including a command segment and a data segment.

However, the above-mentioned claimed limitations are taught by Sakagami'525. In particular, Sakagami'525 teaches said message including a command segment (see FIG. 3, header/control information bits: HD, ADS, SLP, and AP) and a data segment (see FIG. 3, data information bits: Rx). Also see col. 6, line 16-64.

In view of this, having the system of Riley'539 and then given the teaching of Sakagami'525, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Riley'539, by providing a data frame which consists of both command/control/header bits and data bits, as taught by Sakagami'525. The motivation to combine is to obtain the advantages/benefits taught by Sakagami'525 since Sakagami'525 states at col. 3, line 5-40 that such modification would improve the communication and exchange of information between a master station and slave stations.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ian N Moore whose telephone number is 703-605-1531. The examiner can normally be reached on M-F: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 703-305-4798. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Ian N Moore
Examiner
Art Unit 2661

INM
1/22/04


RICKY NGO
PRIMARY EXAMINER